PATENT APPLICATION
Mo-5842/LeA 34,092

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF	)
	)
WERNER OBRECHT ET AL.	) CONFIRMATION NO.: 4130
	)
SERIAL NUMBER: 09/739,034	) EXAMINER: R. SERGENT
	)
FILED: DECEMBER 14, 2000	) GROUP NO.: 1796
	)
TITLE: RUBBER MIXTURES BASED ON UNCROSSLINKED RUBBERS AND CROSSLINKED RUBBER PARTICLES AS WELL AS MULTIFUNCTIONAL ISOCYANATES	)

APPEAL BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This Appeal was commenced by a Notice of Appeal filed February 14, 2012, in response to the Office Action of September 15, 2011. This Appeal Brief is timely filed with a Petition for Extension of Time from the filing date of the Notice of Appeal and appeals the rejection of claims 9 and 23-32 in the above-identified application.

Applicants, by the undersigned attorney, respectfully petition the Commissioner for Patents under the provisions of 37 CFR 1.136(a) to extend the time for filing this Response so that the Amendment and Response filed herewith will be considered timely filed.

The headings used hereinafter and the subject matter set forth under each heading is in accordance with 37 C.F.R. §41.37(c).

CERTIFICATION OF TRANSMISSION BY EFS-Web

I hereby certify that this paper is being transmitted to the U.S. Patent and Trademark Office via EFS-Web May 14, 2012.

Lisa Reagle
Name

Lisa Reagle
Signature

I. REAL PARTY IN INTEREST

Werner Obrecht and Martin Mezger are the only inventors of the invention described and claimed in the above-identified application. The inventors have assigned all rights, title, and interest in the invention of the application to Bayer Aktiengesellschaft (Bayer AG), as evidenced by assignment which was filed with the United States Patent and Trademark Office (USPTO) and recorded on December 14, 2000 at Reel 011392 Frame 0530. Bayer AG subsequently assigned all rights, title, and interest in the invention to Lanxess Deutschland GMBH as evidenced by assignment which was filed with the USPTO and recorded on December 1, 2006 at Reel 018584 Frame 0319.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals, judicial proceedings or interferences known to the Appellant which directly affect or will be directly affected by or have any bearing on the Board of Patent Appeals and Interferences' decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 9 and 23-32 are pending in this application. Claims 9 and 23-32 are rejected. Claims 1-8 and 10-22 were previously cancelled.

The claims on Appeal are Claims 9 and 23-32.

Claims 9 and 23-32 stand rejected under 35 U.S.C. §103(a), as the Office considers them to be obvious over U.S. Patent No. 6,127,488 or DE 19701487 to Obrecht et al., each in view of JP 57-212239 or JP 05-017630.

IV. STATUS OF AMENDMENTS

An Amendment after the Notice of Appeal to cancel Claim 8 was filed April 11, 2012, pursuant to 37 CFR 41.33, otherwise, no other amendments have been filed subsequent to the rejection of Claims 8, 9 and 23-32 in the Office Action mailed March 3, 2011.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The rejected claims are generally directed to molded rubber bodies formed of a rubber vulcanate of a mixture of (A) uncrosslinked, double bond containing rubbers, (B) crosslinked rubber particles and (C) multifunctional isocyanates. The rubber mixture contains 1 to 150 parts by weight crosslinked rubber particles based on 100 parts by weight (phr) of the uncrosslinked, double bond containing rubbers, and 1 to 100 parts by weight multifunctional isocyanates based on 100 parts by weight (phr) of the uncrosslinked, double bond containing rubbers. The crosslinked rubber particles have particle diameters of from 5 to 1000 nm, swelling indices in toluene of from 1 to 15, and a gel content of from 80 % to 100 % by weight.

Support for independent Claim 9 can be found throughout the specification and claims as originally filed. Specifically, support for the claimed rubber mixture can be found on page 2, lines 22-27 and the Abstract; support for the claimed crosslinked rubber particles can be found on page 5, line 25 to page 6, line 3; and support for a rubber vulcanate can be found, for example, on page 11, lines 8-9 and Example 4 on page 14, line 23 to page 17, line 10. Support for particular molded bodies can be found on page 11, lines 10 ff.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Whether Claims 9 and 23-32 are patentable under 35 U.S.C. §103(a), as the Office considers them to be obvious over U.S. Patent No. 6,127,488 or DE 19701487 to Obrecht et al., each in view of JP 57-212239 or JP 05-017630.

VII. ARGUMENTS

The arguments set forth in the Response and Amendment dated September 18, 2002 in response to the Non-Final Office Action mailed June 18, 2002; the arguments set forth in the Response and Amendment dated April 9, 2003 in response to the Non-Final Office Action mailed December 4, 2002; the arguments set forth in the Response and Amendment dated September 17, 2003 in response to the Final Office Action mailed June 17, 2003; the arguments set forth in the Response and Amendment dated March 25, 2004 in response to the Non-Final Office Action mailed December 23, 2003; the arguments set forth in the Response and Amendment dated October 8, 2004 in response to the Final Office Action mailed June 16, 2004; the arguments set forth in the Response and Amendment dated April 29, 2005 in response to the Non-Final Office Action mailed November 29, 2004; the arguments set forth in the Response and Amendment dated February 27, 2006 in response to the Final Office Action mailed July 27, 2005; the arguments set forth in the Response and Amendment dated December 1, 2006 in response to the Non-Final Office Action mailed May 17, 2006; the arguments set forth in the Response and Amendment dated May 21, 2007 in response to the Final Office Action mailed February 22, 2007; the arguments set forth in the Response and Amendment dated October 17, 2007 in response to the Non-Final Office Action mailed June 20, 2007; the arguments set forth in the Pre-Appeal Conference Request dated May 20, 2008 in response to the Final Office Action mailed December 21, 2007 and Examiner Interview held on April 18, 2008; the Pre-Brief Appeal Conference decision dated June 16, 2008; the Appeal Brief filed July 21, 2008; the Examiner's Reply Brief dated November 21, 2008; the BPAI Decision – Examiner Reversed dated March 30, 2010; the arguments set forth in the Response and Amendment dated March 28, 2010 in

response to the BPAI Decision; the arguments set forth in the Response and Amendment dated December 20, 2010 in response to the Non-Final Office Action mailed June 22, 2010; the arguments set forth in the Response and Amendment dated July 5, 2011 in response to the Final Office Action mailed March 3, 2011 are hereby incorporated by reference in their entireties. Each ground of rejection presented for review is addressed hereinafter under the appropriate heading.

I. CLAIMS 9 AND 23-32 ARE NOT OBVIOUS UNDER 35 U.S.C. § 103(A) OVER U.S. PATENT NO. 6,127,488 OR DE 19701487 TO OBRECHT ET AL. , EACH IN VIEW OF JP 57-212239 OR JP 05-017630 .

A. Claims 9 and 23-32

The Office has rejected Claims 9 and 23-32 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,127,488 (hereinafter, " '488") or DE 19701487 (hereinafter, " '487") to Obrecht et al., each in view of JP 57-212239 (hereinafter, "JP '239") or JP 05-017630 (hereinafter, "JP '630").

As best understood, it is the Office's position that the primary references teach a rubber composition useful for vulcanate production but lacking the addition of a polyisocyanate component. However, the secondary references are said to teach such polyisocyanate components; therefore, it is alleged that the combination would be obvious so as to produce rubber compositions having improved moldability and bonding characteristics. Appellants continue to disagree with the Office's assertions.

Claims 9 and 23-32 are currently directed toward specific molded rubber bodies

"[s]elected from the group consisting of cable sheaths, hoses, drive belts, conveyor belts, roller coverings, tire components, shoe soles, gaskets, damping elements and membranes." These bodies are generally understood as having non-adhesive characteristics so as to perform their functions.

As described, for example, in Appellants' Specification, the adhesive qualities of vulcanates containing diisocyanates is known by the skilled artisan as per the prior art to result in adhesiveness. (Page 2, Lines 4-9) Such an adhesive composition would not be expected to perform the function of those specific molded bodies now claimed, which require non-adhesiveness.

Unexpectedly, however, Appellants have discovered that the claimed molded rubber bodies have little or no adhesiveness which would normally be associated with such a body formed with the addition of diisocyantes, which Appellants submit is inventive, therefore, the claims should now be allowed.

An applicant can rebut a *prima facie* case of obviousness where the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. MPEP 716.02(a) If a person of ordinary skill in the art would have been surprised by applicant's results, then the invention could not have been obvious. "The principle applies most often to the less predictable fields, such as chemistry, where minor changes in a product or process may yield substantially different results." *In re Mayne*, 104 F.3d 1339, 1343 (Fed. Cir. 1997), quoting *In re Soni*, 54 F.3d 746, 750, 34 U.S.P.Q.2d 1684, 1687 (Fed. Cir. 1995).

Moreover, the Office's position regarding the cited art fails to change the unexpected and

superior nature of the claimed invention. The combination of '488 or '487 with JP '239 and/or JP '630 would necessarily produce an adhesive composition containing a tackifying resin, which would be expected to render the same unsuitable as the claimed molded body (e.g., cable sheaths, hoses, drive belts, conveyor belts, roller coverings, tire components, shoe soles, gaskets, damping elements and membranes). In other words, it would have been unexpected to one of ordinary skill in the art that a molded body could be produced in accord to the combination of the teachings of the references that would not have adhesive properties. As such, there is clear evidence of the unexpected and non-obviousness nature of Appellants' claimed invention.

JP '630 is directed to adhesive compositions which would be expected to render the combination with '488 or '487 unsuitable for the production of the claimed molded rubber bodies.

With respect to JP '239, Appellants again note, that while JP '239 appears to disclose rubber compositions with high dynamic modulus, JP '239 does not provide any teaching or suggestion that the polyisocyanate component is responsible for this increased property due to the presence of the other components in the rubber composition. For example, in addition to the polyisocyanate, JP '239 discloses that its rubber composition includes, in part, 5-25 parts of unmodified or modified novalac-type phenolic resin. Phenolic resins are well-known to have active hydrogen groups which can react with the isocyanate groups on the polyisocyanate. Further, phenolic resins have been used to impart greater mechanical strength (see e.g., U.S. Patent No. 5,965,671). Hence, the skilled artisan would not have attributed the higher dynamic modulus to the presence of the phenolic resin and, therefore, would have found the claimed molded rubber bodies to be unexpected in view of the combination of the polyisocyanate of JP

'239 with the rubber composition of '488 or '487.

For the aforementioned reasons, Appellants again respectfully assert that the claims are not obvious over the cited references and, therefore, the withdrawal of the rejections is requested.

Conclusion

The Office has failed to show that the non-adhesive molded rubber bodies of the pending claims is obvious over the combination of '488 or '487 with JP '239 or JP '630. The preponderance of evidence clearly establishes the allowability of Claims 9 and 23-32. Reversal of all of the Examiner's rejections and allowance of Claims 9 and 23-32 is respectfully requested.

The USPTO is hereby authorized to charge any fees for an extension of time or those under 37 C.F.R. 1.16 or 1.17, which may be required by this paper, and/or to credit any overpayments to Deposit Account No. 50-2527.

Respectfully submitted,

By _____

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VIII. CLAIMS APPENDIX

9. A molded rubber body comprising a vulcanate rubber which comprise a rubber mixture comprising uncrosslinked, double-bond containing rubbers (A), crosslinked rubber particles (B), multifunctional isocyanates (C), wherein the amount of component (B) in the mixture is from 1 to 150 parts by weight and the amount of multifunctional isocyanates (C) is from 1 to 100 parts by weight, in each case based on 100 parts by weight (phr) of the rubber component (A) and wherein said crosslinked rubber particles (B) have particle diameters of from 5 to 1000 nm and swelling indices in toluene of from 1 to 15 and wherein the gel content of the rubber particles (B) is from 80 to 100 wt.% wherein said molded rubber body is selected from the group consisting of cable sheaths, hoses, drive belts, conveyor belts, roller coverings, tire components, shoe soles, gaskets, damping elements and membranes.

23. The molded rubber body according to Claim 9, wherein said crosslinked rubber particles (B) are present in from 5 to 100 parts by weight and said multifunctional isocyanates (C) are present in from 3 to 50 parts by weight, in each case based on 100 parts by weight of the rubber component (A).

24. The molded rubber body according to Claim 9, wherein said multifunctional isocyanates (C) contain isocyanates having at least two isocyanate groups in the molecule.

25. The molded rubber body according to Claim 24, wherein said multifunctional isocyanates (C) are selected from the group consisting of hexamethylene diisocyanate, 1-isocyanato-3-(isocyanatomethyl)-3,5,5-trimethylcyclohexane, 2,4- and 2,6-diisocyanatotoluene as

well as the corresponding technical isomeric mixture, diphenylmethane diisocyanates, diphenylmethane 4,4'-diisocyanate, diphenylmethane 2,4'-diisocyanate, diphenylmethane 2,2'-diisocyanate as well as the corresponding technical isomeric mixtures, naphthalene 1,5-diisocyanate and 4,4',4"-triisocyanatotriphenylmethane.

26. The molded rubber body according to Claim 9, wherein said uncrosslinked, double-bond-containing rubbers (A) are selected from the group consisting of natural rubber, styrene/butadiene rubber, polybutadiene rubber, nitrile rubber, butyl rubber, brominated isobutylene/isoprene copolymers having bromine contents of from 0.1 to 10 wt.% based on 100 wt.% of said brominated isobutylene/isoprene copolymer, chlorinated isobutylene/isoprene copolymers having chlorine contents of from 0.1 to 10 wt.% based on 100 wt.% of said chlorinated isobutylene/isoprene copolymer, hydrogenated or partially hydrogenated nitrile rubber, styrene/butadiene/acrylonitrile rubber, polychloroprene, epoxidized natural rubber or mixtures thereof, carboxylated nitrile rubbers and carboxylated styrene/butadiene copolymers.

27. The molded rubber body according to Claim 9, wherein said crosslinked rubber particles (B) include those which have been obtained by crosslinking of the following rubbers: polybutadiene, butadiene/acrylic acid C_{1-4}-alkyl ester copolymers, polyisoprene, styrene/butadiene copolymers having styrene contents of from 1 to 60 wt.%, based on 100 wt.% of the styrene/butadiene copolymer, carboxylated styrene/butadiene copolymers, fluorine rubber, acrylate rubber, polybutadiene/acrylonitrile copolymers having acrylonitrile contents of from 5 to 60 wt.% based on 100 wt.% of the polybutadiene/acrylonitrile copolymer, carboxylated nitrile rubbers, polychloroprene,

isobutylene/isoprene copolymers having isoprene contents of from 0.5 to 10 wt.% based on 100 wt.% of the isobutylene/isoprene copolymers, brominated isobutylene/isoprene copolymers having bromine contents of from 0.1 to 10 wt.% based on 100 wt.% of the brominated isobutylene/isoprene copolymers, chlorinated isobutylene/isoprene copolymers having chlorine contents of from 0.1 to 10 wt.% based on 100 wt.% of the chlorinated isobutylene/isoprene copolymers, partially and completely hydrogenated nitrile rubbers, ethylene/propylene/diene copolymers, ethylene/acrylate copolymers, ethylene/vinyl acetate copolymers, epichlorohydrin rubbers, silicone rubbers, polyester urethane polymers and polyether urethane polymers.

28. The molded rubber body according to Claim 27, wherein said styrene/butadiene copolymers have styrene contents of from 5 to 50 wt.% based on 100 wt.% of said styrene/butadiene copolymer.

29. The molded rubber body according to Claim 9, wherein the crosslinked rubber particles (B) comprise functional groups that are capable of reacting with isocyanates.

30. The molded rubber body according to Claim 29, wherein said crosslinked rubber particles (B) have been functionalized with hydroxyl, carboxyl, amino and/or amide groups.

31. The molded rubber body according to Claim 9, wherein the rubber mixtures additionally comprise vulcanization accelerators.

32. The molded rubber body according to Claim 31, wherein the vulcanization accelerators are mercaptosulfenamides.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.